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W180 Steps to Troubleshooting Mastitis

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Troubleshooting mastitis can be an overwhelming task. A large number of details must be studied and scrutinized. It is impossible to write a step-by-step guide that would be useful for all farms, as each farm situation is unique, and troubleshooting mastitis is a mixture of science and art. However, there are four general steps that dairy producers can use as a road map to success. These steps are outlined in this publication. Occasionally, you will be referred to other publications for detailed explanations of certain aspects of troubleshooting.

Step One: Determine if there is mastitis problem in the herd.

Start by calculating your average rate of clinical mastitis. Often, it is advised that there should be fewer than 3 percent of cows in the herd with mastitis or on antibiotic withdrawal at any one time. This goal is often achieved. If you are treating a larger percentage of your herd, you clearly have a mastitis problem. Unfortunately, if the rate of clinical mastitis is the only parameter for determining infection level of the herd, real problems and profit drainers are going to be overlooked.

To truly determine if a mastitis problem is present in the herd, focus on the herd's (or each group's) somatic cell count (SCC). Analyzing average DHIA SCC data or bulk tank SCC over time will reveal the presence of a problem. It is important to use an average SCC, as using only one sample can lead you in the wrong direction. For a detailed discussion on how to read and interpret DHIA SCC data, refer to *Using DHI Reports to Troubleshoot Mastitis* (located in TQMP Module Two).

You must decide what is an acceptable and an unacceptable SCC for your herd. Each herd's ideal SCC will be different. Your ideal SCC will depend on your current SCC; how much money, time or effort it will take to lower it; and how much return you will receive in milk production and quality premiums. To determine returns in production from lowering SCC, use the calculations in *Estimating Losses Using Somatic Cell Counts* (from TQMP Module One pp 95-96, UT Extension, W152). Don't forget to include costs associated with clinical mastitis and potential SCC premium opportunities.

Most farms will find themselves in one of four general categories:
High Quality: < 300,000 cells/ml = At this SCC level, production of high-quality milk and a low level of infection are priorities. To move the herd to a lower average SCC, small details will have to be addressed, as all of the major obstacles have been overcome. At this level, approximately 6 percent of quarters are infected, and there is a small production loss. The decision to lower the herd average SCC should be an economical decision. In other

words, will the necessary changes in management and/or facilities be paid for in improved production and quality premiums?

Average Quality: 300,000 - 400,000 cells/ml = At this level, more than 10 percent of quarters are infected. Herds in this category are experiencing production loss and profits are slowly eroded by subclinical mastitis. To move the herd to a lower average SCC, attention will need to be directed towards groups of cows that are experiencing elevated SCCs. Again, the decision to lower the herd average SCC should be based on farm economics.

Poor Quality: 400,000 - 600,000 cells/ml = Herds at this level are at an elevated risk. It would only take a small problem or drop in milk production to push the herd into the highest category and risk exceeding the regulatory limit. At this level, approximately 16 percent of quarters are infected, and there is significant production loss from both subclinical and clinical cows. You will have to overcome major obstacles to lower the herd average SCC. In almost all cases, it would be economically beneficial.

Very Poor Quality: > 600,000 cells/ml = Herds at this level are at a very high risk of exceeding the regulatory SCC limit, have a substantial number of quarters infected and are losing a substantial amount of production due to subclinical and clinical mastitis. Herds in this category are in crisis and must make immediate, and likely difficult, changes to move the herd to a lower average SCC.

Which category does your herd fall in? Which category do you want your herd to be in? Once you know where you are, it's much easier to navigate towards solutions. You must set a SCC goal for your herd. Your goal will likely depend on where you are now and where you want to go. Are you trying to get your bulk tank SCC under the legal limit? Are you trying to lower your SCC to get a quality premium? Are you trying to improve milk production and farm economics?

Step Two: Identify the cause of infections.

Before making drastic changes to management or facilities, it is imperative to identify which type of pathogens are causing problems by implementing a culturing program. Most pathogens can be categorized as contagious or environmental. Determining which type of pathogens as the source of most infections will help you address problems in a more systematic approach. (For more information on contagious pathogens and environmental pathogens, see TQMP Module One pp 15-33, *A Practical Look at Contagious Pathogens* & *A Practical Look at Environmental Pathogens*). There are many different types of culturing programs. How you approach which cows to culture will likely depend on which risk category your herd is in. To assist with the development of a culturing program and interpreting culture results, refer to *Mastitis Culturing Programs* (located in TQMP Module Two).

Step Three: Evaluate the situation.

Now that major type(s) of pathogens have been revealed, it is time to bring in a third party to evaluate the farm, management, procedures, facilities and equipment. A fresh set of eyes will

help you identify deficiencies that contribute to the problem. A team of evaluators will likely be needed. Evaluators should be selected based upon their area and level of expertise or training. To ensure meaningful evaluations, full disclosure is ***your*** responsibility. For example, do not schedule an evaluation the day after fresh bedding was added, as it will not reveal the true situation. It would be more helpful for the evaluator to observe freestalls the day before fresh bedding is applied. This will reveal deficiencies in bedding management.

Parlor evaluations should be a priority for farms with contagious-type pathogens as a significant source of infections. Examples of recommended evaluations include observation of milking time routine (evaluating the hygiene and execution of farm protocols), investigation of pre- and post- dips (for safety and efficacy), milking equipment evaluation (for problems in equipment or settings that promote pathogen transfer), lactating cow therapy (for appropriate use and administration of antimicrobials), dry cow therapies and management (for appropriate use of antimicrobials and dry cow environment) and fly control programs. This list is not exhaustive, and more evaluations may need to be performed.

Farms with environmental pathogens will also need extension evaluations. Significant attention needs to be placed on the environment where cows are housed (i.e., dry lots; freestall design, use and comfort; types of bedding used; bedding maintenance; and dry cow and heifer housing). Prevention of environmental infections by managing the environment of the cow is the best way to overcome this type of pathogen. Evaluations should also investigate antimicrobial therapies used in lactating and dry cows (for appropriate use and administration); pre-dips (for appropriate use, safety and efficacy); and milking equipment evaluations. This list is not exhaustive, and more evaluations may need to be performed.

Step Four: Address the situation.

Through analysis of SCC data, culture data and farm evaluations, most deficiencies that have led to your current mastitis situation should be revealed. In most cases, there will be several factors contributing to the problem. Rather than trying to solve all problems at once, each should be prioritized by contribution to the mastitis situation and cost or ease of correcting. Some deficiencies can be easily overcome. For example, if culture and antibiotic sensitivity data indicate that you are not using an effective antibiotic, then switch to an antibiotic that will be more effective. However, other deficiencies may require a significant financial investment. For example, freestalls that are undersized or falling apart can lead to cow-comfort issues, forcing cows to seek alternatives (i.e., alleys). Replacing all freestalls would require a significant financial investment, which may not be possible. An alternative might be to renovate or repair small sections of the freestall barn at a time.

As herd average SCC improves, the list of deficiencies will decrease and attention to small details must increase. How far you choose to lower your herd average SCC will depend on financial investment, difficulty in implementing changes and financial return. In many cases, the largest obstacle to overcome is the lack of patience. If your herd is in the highest category and is skirting (or over) the legal limit, do not expect to make a few changes and reach an average of 300,000 cells/ml within a few months. A more realistic goal would be to move the herd to the next lower category. You may eventually get to 300,000 cells/ml, but it may take two to

three years to get there. It is vital that you give management or facility changes time to work. It took months, and maybe years, to get into your current situation. It will take months, and possibly years, to reach your goal. However, if you approach your mastitis situation systematically, make necessary changes over time, and most importantly, be patient, you will reach your long-term herd SCC goal.